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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,322	03/29/2004	Chirag Deepak Dalal	VR.T0125US	2702
60429	7590	10/02/2006	EXAMINER	
CSA LLP			VO, THANH DUC	
4807 SPICEWOOD SPRINGS RD.			PART UNIT	
BLDG. 4, SUITE 201			PAPER NUMBER	
AUSTIN, TX 78759			2189	

DATE MAILED: 10/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/812,322	DALAL ET AL.	
	Examiner	Art Unit	
	Thanh D. Vo	2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/26/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to the Amendment filed on July 13, 2006. Claim 28 have been canceled. Claims 1-4, 6-13, and 15-27 have been amended. Claims 1-27 are presented for examination. All rejections and objections not repeated below are withdrawn.
2. The information disclosure statement (IDS) submitted on 7/26/2006 was filed after the mailing date of the Office Action on 4/10/2006. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.
3. Applicant's arguments filed July 13, 2006 have been fully considered but they are not persuasive. The rejection is maintained as follow:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1-9 and 13-28 are rejected under 35 U.S.C. 102(a) as being unpatentable by Soejima et al. (2003/0074528).

As per claims 1, 13, 18, and 23, Soejima et al. disclosed a system or method comprising:

determining a first specification for a first set of storage regions (page 2, par. [0018]), wherein the first set of storage regions is needed to perform an operation on a logical volume (page 2, par. [0017]), and the first set of storage regions satisfies an intent of the logical volume (page 2, par. [0019]);

searching a plurality of existing storage regions for a corresponding storage region for each storage region in the first set of storage regions (page 2, par. 0022, lines 1-6, and par. 0024); and

if no existing storage region is found corresponding to a first storage region in the first set of storage regions, determining a second specification for a second set of storage regions. *See Fig. 4, step 4007 and Fig. 6, steps 6002-6006, wherein an alternate plan is executed if the specification was not satisfied in Fig. 4, step 4007 and a new specification is set in Fig. 6 to determine if there are other storage regions that satisfied the new specification. See corresponding figure descriptions in specification for further clarification.*

As per claims 2, 19, and 24, Soejima et al. disclosed a method, wherein the second set of storage regions comprises at least the first storage region (see *Fig. 6, if there is not enough of unoccupied area satisfying the first requested capacity and access time (first specification) then it will search using an alternate plan (second specification). The method of looking for unoccupied area using a second specification shows that the second set of storage regions also comprises partial region of the first storage region that satisfies the first specification, see Fig. 9, 10, 11a-b, since the*

second set of storage regions is a combination of first and second specifications to search for available storage area.

As per claims 3, 20, and 25, Soejima et al. disclosed a method, wherein the second specification for the second set of storage regions comprises an attribute of the first storage region (See Fig. 9-10, the attribute such as access time and demand/second are common/shared between the first and second storage regions), and a connection between the first storage region and a storage object in the logical volume *is an inherent feature of Soejima et al. since it is required in storage system to have a connection/pointer indicating which storage region in a logical volume where the storage object is being stored at in order to retrieve or delete the data whenever it is required.*

As per claims 4 and 14, Soejima et al. disclosed a method further comprising:
using the second specification to acquire a third set of storage regions. See Fig.7

As per claims 5 and 15, Soejima et al. disclosed a method, wherein the third set of storage regions is a subset of the second set of storage regions. Claims 5 and 15 are rejected under the same rationale as claims 2, 19, and 24 since searching for another unoccupied storage region as disclosed in Fig. 9-10 and Fig. 11a-b is a process of searching for remainder of unoccupied area wherein the remainder of the unoccupied area is a subset of the previously selected area.

As per claims 6, 16, 21, and 26, Soejima et al. disclosed a method further comprising:

acquiring the second set of storage regions (page 3, paragraph 0041, lines 1-12);
and

performing the operation on the logical volume using the second set of storage regions. *See Fig. 3 and corresponding figure description in specification regarding operation of creating the logical volume.*

As per claim 7, Soejima et al. disclosed a method, wherein the second set of storage regions satisfies the intent of the logical volume (page 2, par. [0019]).

As per claims 8, 17, 22, and 27, Soejima et al. disclosed a method further comprising:

determining a third specification (page 2, paragraph 0023), where in the determining the third specification comprises specifying an existing storage region of the plurality of existing storage regions to reserve for performing the operation (page 2, paragraph 0024).

As per claim 9, Soejima et al. disclosed the second set of storage regions excludes a second storage region in plurality of existing storage regions. *See Fig. 11(a)*, wherein parity group 1 (comprising storage regions) does not include the physical disks (comprising storage regions) that are in parity group 2.

As per claim 28, Soejima et al. disclosed a computer system comprising:
a processor (Fig. 2); and
the computer-readable medium of claim 25 (see claim 25 rejection in respect to Soejima et al.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soejima et al. (2003/0074528) in view of Applicant Admitted Prior Art (hereinafter AAPA).

As per claims 10, 11, and 12, Soejima et al. did not explicitly disclosed a method wherein the operation comprises increasing a size of the logical volume, evacuating data from the logical volume, or relocating data of the logical volume.

However, AAPA disclosed the operation such as increasing the size of a logical volume, evacuating data from the logical volume, or moving a logical volume to a different physical location. See page 2, paragraph 0004, lines 5-7 of the Specification of AAPA. It would have been obvious to one having an ordinary skill in the art at the time of the Applicant's invention to realize that it is advantageous to apply the invention of Soejima et al. into said operations since the system will operate automatically without

requiring a storage administrator to keep track of how particular volumes are implemented and enable the intent of a logical volume to be consistently maintained while avoiding common errors that might caused by the administrator.

Response to Arguments

6. On pages 11-12 of the Remarks dated July 13, 2006, Applicant argued that the cited prior art Soejima et al. (US 2003/0074528) failed to teach following:

- a) the request include a specification of a set of needed storage regions.
- b) the storage regions are needed to perform an operation on a logical volume.
- c) an intent of the logical volume or a determination whether the first set of needed storage regions satisfies that intent.
- d) searching existing storage regions for a corresponding existing storage region for each needed storage region in the first set.
- e) determining a second specification for a second set of storage regions to be acquired if no existing storage region is found corresponding to the first needed storage region.

With respect to (a), Applicant acknowledges that Soejima's volume creation request may include information about storage capacity and average performance (Remarks, page 11). In addition, Soejima et al. clearly discloses such teaching on page 2, paragraph [0018]. Therefore, the specification/requirement that is set by Soejima et al. to create a logical volume is based on the storage capacity and average performance.

With respect to (b), Soejima et al. discloses the operation as “setting at least a logical volume over a plurality of physical devices” on paragraph 0017. In addition, it is readily apparent to one having an ordinary skill in the art to recognize on the paragraph 0017 that the physical devices are the physical volume being used to create the logical volume as later clarified on paragraph 0018.

With respect to (c), the intent is to use the unoccupied area of physical storage devices to form at least one logical volume, wherein the unoccupied area has to be satisfied with the requested storage capacity. See paragraph 0019 and paragraph 0022.

With respect to (d), paragraph 0022 discloses a method of searching a storage apparatus comprising a plurality of physical storage devices, on which at least one logical volume is set. It is readily apparent to one having an ordinary skill in the art at the logical volume is set/created by using the plurality of physical storage devices, wherein the physical storage devices are the existing storage area/regions of the system and the unoccupied area of the storage devices are corresponding to the requested/needed storage region/area.

With respect to (e), Soejima et al. clearly discloses an alternative plan that has a different specification/requirement compare to the previous requirement in order to acquire the storage area that satisfies the alternative plan or alternative specification. See claim 1 rejection for further clarification.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh D. Vo whose telephone number is (571) 272-0708. The examiner can normally be reached on M-F 9AM-5:30PM.

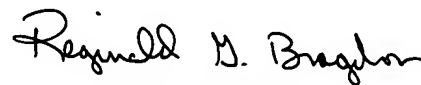
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald G. Bragdon can be reached on (571) 272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2189

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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9/26/2006



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